

SOV/89-6-4-17/27

Meeting of the Committee of Authorized Representatives of Governments
Which Are Members of the Joint Institute of Nuclear Research

second day the management was newly elected. Wilhelm Billig (Poland) recommended that the following gentlemen be elected directors of the Institute for the second working period: D. I. Blokhintsev as director, Van Gan-ghan (Chinese People's Republic) and Emil Dzhakov (Bulgaria) as vice-directors. The suggestion was unanimously accepted. By recommendation of the Korean delegate Professor Kim Khen Bon the assembly expressed their gratitude to the directors who gave up their posts: Professor D. I. Blokhintsev, Corresponding Member of the Czechoslovakian Academy of Science: Vaclav Votruba, and Professor Marian Danysz (Poland). Next, the representative of the financial committee, Ludwik Pawlowski, Director General of the Polish Ministry of Finance, spoke about the financial situation of the Institute. His budgetary plan, especially with respect to the building of new laboratories, was unanimously passed. On the last day the representatives of the 12 Socialist countries signed a document demanding that scientific collaboration among Socialist countries be extended. Following the signing of this document, the directors of the Institute gave a reception which was attended by: Petrak Pilik,

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Head of the Physics Department of Tirana University, Albania, Georgi Nadzhakov, Vice-president of the Bulgarian Academy of Sciences, Arpad Kis, Head of the Department of State Planning of the Hungarian People's Republic, Nguyen Shong Tung, authorized representative of the People's Republic of Vietnam, Professor Karl Rambush, Head of the Administration for Nuclear Research and Nuclear Engineering of the Government of the German Democratic Republic, Lyan Chao, Deputy Director of the Nuclear Energy Institute of the Chinese People's Republic, Minister Wilhelm Billig, Special Representative of the Polish Government for Problems of Nuclear Energy, Horia Kubulei, Director of the Nuclear Physics Institute of the Romanian Academy of Sciences, Corresponding Member, AS USSR, V. S. Yemel'yanov, Head of the Chief Administration for the Uses of Atomic Energy attached to the USSR Cabinet Council, Jaroslav Kožesník, Secretary General of the Czechoslovakian Academy of Sciences, and the Members of the Soviet and foreign government delegations. The newly elected directors were heartily acclaimed by all present.

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21(3)

SOV/89-6-6-24/27

AUTHOR: Parkhit'ko, V., Special Correspondent of the "Atomnaya energiya",
Novosibirsk

TITLE: On the Cytogenous Effect of Small Doses of Ionizing Radiation
on Mammals (O tsitogeneticheskom deystvii malykh doz ioniziruyushchey radatsii u mlekopitayushchikh)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 6, pp 690-691 (USSR)

ABSTRACT: The present article deals with an interview by the author with Yu. Ya. Kerkis, Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR (Institute of Cytology and Genetics of the Siberian Department of the AS USSR), mainly on research in the Laboratoriya radiatsionnoy genetiki (Laboratory for Radiation Genetics) of the mentioned Institute. The purpose of these investigations is the determination of the degree of change in the chromosome sets by the action of small doses of X-ray irradiation on the sex cells of four species of mammals: guinea pigs, rabbits, white rats, and white mice. The cytogenous effects were investigated with a dose of 4 r; the closeness of the occurrence of the chromosome transformations in the spermatogonia was used as criterion of the efficiency of small ir-

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On the Cytogenous Effect of Small Doses of Ionizing Radiation on Mammals

radiation doses. Guinea pigs showed the highest sensitivity to this dose of 4 r, followed by white rats and rabbits; white mice showed the least sensitivity. A chromosome formation was observed after the first 24 hours of irradiation in 11.4% of guinea pigs investigated (0.83% in controls); rabbits: 2.1% (0.93%), rats: 2.42% (1.48%), mice: 0.79% (0.59%). The data are compared with those found by G. G. Tinyakov and M. A. Arsen'yeva, collaborators of the Laboratory for Radiation Hygiene of the Institut biofiziki AN SSSR (Institute of Biophysics AS USSR). The investigations showed that the radiation sensitivity strongly depends on the species of the mammals. N. P. Dubinin, Corresponding Member, AS USSR, Director of the Institute of Cytology and Genetics, investigated the problem which dose of ionizing radiation is necessary for doubling the mutation rate in man.

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21(10)

AUTHOR: Parkhit'ko, V., Tokyo

SOV/10-10 1001/86

TITLE: Tokyo School for the Training of Laboratory Assistants for Work With Radioactive Isotopes (Tokiyskaya shkola po podgotovke laborantov dlya raboty s radioaktivnymi izotopami)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 1, pp 86 - 87 (USSR)

ABSTRACT: In the Tokyo school laboratory workers are trained who are versed in the use of radioactive isotopes in industry, medicine, and agriculture. One course takes 6 months. The maximum number of participants in such a course is 30 persons, for whom modern physical- and chemical laboratories are available. Nearly all devices are of Japanese origin. A very voluminous library (periodicals and books) is at the disposal of the participants in these courses. The teachers are nearly all recruited from the physical- and chemical research institutes of Tokyo. A photograph shows the director of the school Yuzi Hamada, and the librarian. There is 1 figure.

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21(7),24(5)

AUTHOR:

Parkhit'ko, V.

SOV/89-7-4-19/28

TITLE:

The International Conference on Cosmic Rays

PERIODICAL:

Atomnaya energiya, 1959, Vol 7, Nr 4, pp 389-390 (USSR)

ABSTRACT:

The International Conference on Cosmic Rays convened by the International Association of Pure and Applied Physics took place from July 6 to July 11, 1959 in the building of the Moskovskiy gosudarstvennyy universitet (Moscow State University). D. V. Skobel'tsyn pointed out that the artificial earth satellite marks the beginning of a new epoch in the investigation of cosmic radiation. The main problem to be dealt with in this field is the discovery of the nature of nuclear interaction at extremely high energies, which are inaccessible to accelerator engineering. The first session of the conference dealt with the achievements made by scientists all over the world in this field. S. Powell was chairman of this session. The Soviet scientist N. L. Grigorov spoke about an original method of carrying out investigations at any energies of cosmic particles. Also work carried out in Pamir under the supervision of Professor N. A. Dobrotin aroused considerable interest. High up in the mountains the character of nucleon - proton interaction

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was investigated, on which occasion particle energy was successfully measured according to Grigorov's method. Also the work carried out by the physicist of the Kazakhskaya SSR as well as by Hungarian and Japanese physicists supplied valuable data concerning nuclear interactions at high energies. The second session dealt with one of the main problems of modern physics, viz. with the interaction between elementary particles and atomic nuclei at energies which are thousands and millions of times greater than those which can be obtained in the largest modern accelerators. After a survey given by Professor Ye. L. Feynberg (USSR) information was given concerning new investigations in this field. Soviet- and non-Soviet scientists spoke about the nature of the process of the multiple production of particles: At extremely high energies every particle collision leads to the production of a very large number of new particles. D. S. Chernavskiy spoke about work carried out at the Fizicheskiy institut im. P. N. Lebedeva (Physics Institute imeni P. N. Lebedev) in Moscow. In the course of the following days the results obtained by investigations of broad atmospheric showers were discussed at the conference. A special session dealt with primary cosmic radiation. A report was given on the

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investigation of primary cosmic radiation carried out by means of balloons, rockets, and artificial satellites during the interesting session of July 10. Much experimental material concerning the formation of the external and internal "belt of clouds" has, meanwhile been accumulated. Special attention was concentrated upon the origin of the cloud of charged particles surrounding the earth. Before the flight of the artificial satellites, nothing at all had been known of the existence of such a cloud. Corresponding Member of the AS USSR S. N. Vernov and Candidate of Physico-Mathematical Sciences A. Ye. Chudakov reported on the conclusions to be drawn from Soviet investigations of these clouds. Soviet and American research workers arrived at the following conclusions: the charged particles in the interior of the cloud are produced by the decay of neutrons emitted by the terrestrial atmosphere as a result of the incidence of cosmic radiation. The particles of the outer belt might originate from the sun. A great impression was made by the statement by N. V. Pushkov and S. F. Dolginov that electric currents flow in the cloud of charged particles surrounding the earth, which exercise considerable influence upon the terrestrial magnetic field. Also what was said about the

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observations made in Australia concerning the Soviet earth satellites aroused considerable interest. The last day of the Conference was devoted to the origin of cosmic rays. The greatest attention was paid to the lectures by V. L. Ginzburg "Some Problems of the Theory Concerning the Origin of Cosmic Radiation", by L. Davis (USA) and some Japanese research workers. At the close of the Conference Professor B. Rossi, the chairman of the Conference on Cosmic Radiation of the International Society for Pure and Applied Physics, thanked the Soviet physicists in the name of the foreign guests for their hospitality and for the favorable working conditions at the Conference. There are 1 figure and 1 Soviet reference.

Card 4/4

S/089/60/009/002/012/015
B006/B056

AUTHORS: Koryakin, Yu., Parkhit'ko, V.

TITLE: Atomic Energy on the Czechoslovakian Exposition in Moscow

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 2, p. 148

TEXT: A short report is given on the scientific section of the Czechoslovakian Exposition, which was held in Moscow from May to June, 1960. A map of Czechoslovakia was shown, on which all observatories and scientific research stations which contributed to the program of the International Geophysical Year were entered. Among them were the stations "Lomnický Štít" and "Praha-Karkov" (investigation of cosmic radiation) as well as "Hradec Kralove", "Hopok", "Lomnický Štít", and "Milešovka" (investigation of nuclear radiation). The use of radioactive isotopes in economy and science was illustrated by some photographs. Also an electron microscope with 30,000-fold enlargement was on show, which is mass-produced in Czechoslovakia. Such microscopes are being imported e.g. by the USSR. At present, an atomic power plant with a capacity of 150,000 kw is being built in Czechoslovakia by the Institute of Atomic Energy. There is 1 figure.

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PARKHIT'KO, Vsevolod; KROTOVA, I.I., otv.red.; KAMIR, B.I., otv.red.;
GOLUBEVA, V.A., tekhn.red.

[Conquerors of the ocean] Pobediteli okeana. Moskva, Gos.
izd-vo detakoi lit-ry M-va prosv.RSFSR, 1960. 62 p. (MIRA 13:3)
(Survival (After airplane accidents, shipwrecks, etc.))

PARKHIT'KO, V.P.; KRASIN, A.K., prof., doktor fiz.-matemat.nauk, obshchiy
red.; PCHZLINTSEVA, N.M., red.; VLASOVA, N.A., tekhn.red.

[Inexhaustible resource] Nauchnoye izdaniye. Moskva, Izd-vo Glav.
uprav.po ispol'zovaniyu atomnoi energii pri Sovete Ministrov
SSSR, 1959. 149 p. (MIRA 13:1)
(Atomic energy)

PARHODKO, A.P.; PILIRID, R.D.

Development of the sugar industry of Cherkassy Province
in the post-October period. Sakm. rev. 31 no. 12-13 1956.
(Sakm. 10: 1)

1. Cherkasskiy sakhsvoletrest.
(Cherkassy Province--sugar industry.)

MILIRUD, B.T.; PARKHOD'KO, A.P.

Prospects for the development of the sugar industry in Cherkassy
Province. Sakh. prom. 32 no.4:5-7 Ap '58. (MIRA 11:6)

1. Cherkasskiy sakhsveklotrest.
(Cherkassy Province--Sugar industry)

PARKHOD'KO, A.P.

Control of the thickness of cassettes "in operation." Sakh.prom. 38
no.1:39-43 Ja '64. (MIRA 17:2)

1. Cherkasskiy ~~sk~~losakharnyy trust.

PARKHOD'KO, A.P.

Experience in the maintenance and repair of equipment in the
factories of the Cherkassy Sugar Trust. Sakh.prom. 37 no.11:
14-17 N '63. (MIRA 16:11)

1. Cherkasskiy gosudarstvennyy trest po vyrashchivaniyu sakhar-
noy svekly.

PARKHOD'KO, A.P.; GULIVETS, M.O.

Converting factories to the use of fuel oil. Sakh.prom. 33 no.7:
41-46 J1 '59. (MIRA 12:11)

1. Shpolyanskiy sakharney zavod.
(Boilers) (Sugar industry)

PARKHOD'KO A.P., MILIRUD, B.G.

Sugar industry of the Cherkassy Province in the second year of
the seven-year plan. Sakh.prom. 34 no.7:12-16 J1 '60.
(MIRA 13:7)

1. Cherkasskiy sakhsveklotrest.
(Cherkassy Province—Sugar industry)

PARKHOD'KO, A.P.; MILLERUD, B.T.

State of the sugar industry in the Cherkassy Province in the past
and today. Sakh.prom. 38 no.3:18-22 Mr '64. (MIRA 17:4,

1. Cherkasskiy sakharney trest.

VLASYUK, V.V.; PARKHOD'KO, A.P.

Improve fuel utilization at factories of the Cherkassy
Sakhavokhtrest. Sakh. prom. 32 no. 7:34-36 Jy '58. (MIRA 11:8)

1. Cherkasskiy sakhsavokhtrest.
(Cherkassy Province--Sugar industry)

STEPANENKO, I.D.; MILIKUD, B.T.; PARKHOD'KO, A.P.

Using new methods in organizing the repairing and remodeling of
sugar factories. Sakh.prom. 33 no.6:45-48 Je '57.
(MIRA 12:8)

1. Cherkasskiy sakhsvetlotrest.
(Sugar industry--Equipment and supplies)

PARKHOD'KO, A.P.; MILIRUD, B.T.

Let's open the way for new developments. Sakh. prom. 37 no.3:
1-5 Mr '63. (MIRA 16:4)

1. Cherkasskiy gosudarstvennyy trest po vyrashchivaniyu sakharnoy
svekly.

(Sugar industry)

PARKHOD'KO, A.P.

Limekilns

Stakhanovite instructor S.D. Novak's work practice at the lime kiln. Sakh. prom.
26 No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952 ~~1951~~, Uncl.

PARKHOMCHUK, M.A.; ZARECHSKIY, A.G.; KOVALICHUK, I.S.

Modification of the composition of molasses stillage during the
growing of fodder yeast. Ferment. spirit. prom. 31 no.4:40-43 '65.

(MIRA 12:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut spirtovoy i likernoy
vodochnoy promyshlennosti.

PARKHOMCHUK, M.A.; ZABRODSKIY, A.G.; VAS'KO, T.P.

Intensification of the process of feed yeast growing. Spirt.
prom. 29 no.8:15-21 '63. (MIRA 17:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut spirtovoy
i likero-vodochnoy promyshlennosti.

ZABRODSKIY, A.G.; VAS'KO, T.P.; PARKHOMCHUK, M.A.

Use of molasses' distillery wastes for the production of feed concentrates. Izv.vys.ucheb.zav.; pishch.tekh. no.3:66-70 '62.
(MIRA 15:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut spirtovoy i likerovodochnoy promyshlennosti, laboratoriya spirtovogo i drozhzhevogo proizvodstva.

(Feeds) (Distilling industries--By-products)

PARKHOMCHUK, G.I., mashinist ekskavatora, brigadir.

~~Two yearly norms in two months.~~ Gor.khoz.Mosk. 25 no.10:34-35 0 '51
(MIRA 6:11)
(Excavation)

PARKHOMCHUK, M.A.

Comparative evaluation of some fodder yeast strains grown on
distiller's waste. Prikl. biokhim, i mikrobiol. 1 no. 6:
716-717 N-D '65. (MIRA 18:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut spirtovoy i
likero-vodochnoy promyshlennosti i Nauchno-issledovatel'skaya
laboratoriya Dokshukinskogo atsetonovogo zavoda. Submitted
June 8, 1965.

ZABRODSKIY, A.G.; VAS'KO, T.P.; PARKHOMCHUK, M.A.; POGREVNAYA, V.F.

Production of yeast feeds in molasses distilleries of the Ukrainian
S.S.R. Trudy Ukr.NIISP no.8:3-15 '63. (MIRA 17:3)

PARKHOMCHUK, S.M.

International book exchange of institutions of the Academy of
Sciences of the Ukrainian S.S.R. Dep.AN URSS no.4:560-561 '60.
(MIRA 13:7)
(Ukraine--Exchanges, Literary and scientific)

BUNAREVA, Z.S.; PARKHOMCHUK, V.I.; KISELEVA, N.K.; KOLYSHKINA, Yu.I.

Antistatic finishing of polyvinyl chloride fibers. Khim. volok.
no.6:20-22 '65. (MIRA 18:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (for Bunareva, Parkhomchuk). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo volokna (for Kiseleva, Kolyshkina). Submitted February 25, 1964.

BELOZEROV, V.G., (Kursk, ul. Engel'sa d.136, kv.27); SKVORTSOV, B.A. (Leningrad, ul. Soyuza pechatnikov, d.7.kv.26); PARKHOMCHUK, Ya. (Leningrad, ul. Soyuza pechatnikov, d.7.kv.26); TRAUBE, Ye.S. (Donetsk, 5, ul. Shchorsa, d.12. kv.8); DROZDOV, A.D. (Novocherkassk, ul. B.Khmel'nitskogo d.151. kv.26); VAYNBERG, A.M. (Moskva, V-180, Malaya Yakimanka, d.22, kv.19); FILATOV, M.A. (Kemerovo, ul. Dzerzhinskogo d.27, kv.11); GANZBURG, L.B. (Leningrad P-3, Krasnosel'skaya, d.12, kv.2); BUDANOV, V.D. (Moskva, A-287, Chuksin tupik, d.4, kv.17); LYSENKO, N.G. (Kiyev, ul. Sulimovskaya, d.5.kv.71); SHEFGIN, Ye.N. (Cherkassy, ul. Uritskogo, d.37, kv.6); TRUSHCHEV, Ye.A.; SUVOFOV, Yu.I. (Riga, ul. Suvorova, d.20, kv.11); ARTAMONOV, I.G. (Riga, ul. Suvorova, d.20, kv.11); OKHAPKIN, V.V. (Yaroslavl', Tutayevskoye shosse, d.32); OL'KHOVSKIY, I.L. (Khar'kov, pr. Moskovskiy, d.199)

Discoveries and inventions. Prom.energ. 19 no.7:55-56 J1 '64.
(MIRA 18:1)

1. Bereznikovskiy sodoyny zavod, byuro po ratsionalizatsii i izobretatel'stvu, Permskaya obl., g. Berezniki (for Trushchev).
2. Yaroslavl', Tutayevskoye shosse, d.32, YaZMOGK (for Okhapkin).
3. Khar'kov, pr.Moskovskiy, d.199, Khar'kovskiy elektromekhanicheskii zavod, byuro po ratsionalizatsii i izobretatel'stvu (for Ol'khovskiy).

PARHOMENKO, A.D.; BURLIN, Yu. K.

Stratigraphic distribution of foraminifera in the Neocomian of the northwestern Caucasus. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 13 no. 1:119-124 '58. (MIRA 11:7)

1. Moskovskiy gosudarstvennyy universitet, Kafedra paleontologii i geokhimii goryuchikh iskopaemykh.

(Pshekh Valley--Foraminifera, Fossil)

(Pshish Valley--Foraminifera, Fossil)

PARKHOMENKO, A. D.

Some data on the microfauna of the Tertiary deposits of southern
Sakhalin. Soob.Sakhal.fil. AN SSSR no.3:102-110 '56. (MIRA 10:7)
(Sakhalin--Paleontology, Stratigraphic)

PARKHOMENKO, A.N., inzh.

Use of waste water from sugar plants in irrigation. Khidrotekhn
i melior 9 no. 3:72-73 '64.

PARKHOMENKO, A.N., inzh.

Using the waste water from sugar refineries for irrigation. Gidr. 1 mel.
16 no.1:32-34 Ja '64. (MIRA 17:2)

PARKHOMENKO, A.N., inzh.

Using the waste water from sugar refineries for irrigation. Gidr. i mel.
16 no.1:32-34 Ja '64. (MIRA 17:2)

PARKHOMENKO, A. R.

"Mud Treatment in the Therapy of Spinal Arachnitis." Cand
Med Sci, Central Inst for the Advanced Training of Physicians, Min
Health USSR, Moscow, 1955. (KL, No 11, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical
Dissertations Defended at USSR Higher Educational Institutions (15)

1. PARKHOMENKO, A.S.
2. USSR (600)
4. Geometry
7. Number of dimensions, Mat.v shkole no. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

PANTHOMENKO, A.S.; LAPKO, A.P., redaktor; NEGRIMOVSKAYA, R.A., tekhnicheskiiy redaktor.

[What is a line] Chto takoe liniia. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1954. 139 p. (MLRA 8:2)
(Aggregates) (Curves)

PARKHOMENKO, ALEKSEY SERGEYEVICH

BAKHVALOV, Sergey Vladimirovich, MODZHOV, Petr Sergeyevich, ~~PARKHOMENKO~~
~~Aleksey Sergeyevich~~; TSVETKOV, A.T., redaktor; GAVRILOV, S.S.,
tekhnicheskii redaktor

[Collection of problems in analytic geometry] Sbornik zadach po
analiticheskoi geometrii. Izd. 2-oe, perer. Moskva, Gos. izd-vo
tekhniko-teoret.lit-ry, 1957. 384 p. (MLRA 10:10)
(Geometry, Analytic--Problems, exercises, etc.)

MODENOV, P.S.(Moscow); PARKHOMENKO, A.S.(Moscow)

Projective plane and its topology. Mat. v shkole no. 4:5-17
J1-Ag '58. (MIRA 11:7)

(Geometry, Projective)
(Topology)

BAKHVALOV, Sergey Vladimirovich; MOSELOV, Petr Sergeyevich;
PARKHOMENKO, Aleksey Serapionovich; MONOZKOVA, I.Ye., red.

[Problems in analytic geometry] Sbornik zadach po analiti-
cheskoi geometrii. Izd.3., perer. Moskva, Nauka, 1964. 440 p.
(MIRA 17:10)

LEONOVA, S.; PARKHOMENKO, A.; BRUSSER, I.; MERKINA, N.; MARTYENKO, G.;
YEGOROV, Yu. (Leningrad); NUTSKIY, Ya.; ARTEMOV, N.; ZHMUDSKIY, Yu.

We can learn from the practices applied in Leningrad. Mest.prom.
i khud.promys. 3 no.5:13-20 My '62. (MIRA 15:6)

1. Zamestitel' predsedatelya Gosudarstvennogo komiteta Soveta
Ministrov RSFSR po delam mestnoy promyshlennosti i khudozhest-
vennykh promyslov RSFSR (for Leonova). 2. Upravlyayushchiy
kontoroy "Lengorvtorsyr'ye" (for Parkhomenko). 3. Direktor
Leningradskoy Sortirovochno-moyechnoy fabрики No.1 kontory
"Leningradsyr'ye" (for Brusser). 4. Glavnyy inzh. Leningradskoy
Sortirovochno-moyechnoy fabрики No.1 kontory "Lengorvtorsyr'ye"
(for Merkina). 5. Direktor fabрики "Vtorprom" kontory
"Lengorvtorsyr'ye" (for Martynenko). 6. Spetsial'nyy korrespondent
zhurnala "Mestnaya promyshlennost' i khudozhestvennyye promysly",
(for Yegorov). 7. Inspektor po kadram fabрики "Trud" (for
Nutskiy). 8. Direktor fabрики "Trud", g. Leningrad (for Artemov).
9. Zamestitel' direktora fabрики "Trud", g. Leningrad (for
Zhmudskiy).
(Leningrad--Salvage (Waste, etc))

PISANKO, Ye.O. [Pysanko, IE.O.], kand. sel'skokhoz. nauk;
DENISENKO, I.G. [Denysenko, I.H.], inzh.; PARKHOMENKO, A.G.
[Parkhomenko, A.H.], inzh.; KARTAVTSEV, A.I., inzh.

Practices in harvesting grain by the continuous method. Mekh.
sil'. hosp. 12 no.12:19-20 D '61. (MIRA 17:1)

PARKHOMENKO, A.S. (Moskva)

The non-Euclidean geometry of Riemann. Mat. v shkole no.2:54-
70 Mr-Apr '61. (MIRA 14:4)
(Geometry, Non-Euclidean))

MODENOV, Petr Sergeyevich; PARKHOMENKO, Aleksey Serapionovich;
KAPUSTINA, V.S., red.; YERMAKOV, M.S., tekhn. red.

[Geometrical transformations] Geometricheskie preobrazovaniia.
Moskva, Izd-vo Mosk. univ., 1961. 230 p. (MIRA 15:2)
(Geometry, Projective)

BUGRO, F.Ye., inzh.; PARKHOMENKO, A.V., inzh.

Device for marking boreholes in sinking vertical mine shafts.
Shakht. stroi. 6 no.6:24-26 Je '62. (MIRA 15:6)

1. Pechorskiy nauchno-issledovatel'skiy ugol'nyy institut.
(Shift sinking--Equipment and supplies)

PARKHOMENKO, A. V.

Min Higher Education USSR. Moscow, Technological Inst of the Meat and Dairy Industry.

PARKHOMENKO, A. V. - "Obtaining cholesterol and phosphatides from the spinal cord of cattle." Min Higher Education USSR. Moscow, Technological Inst of the Meat and Dairy Industry. Moscow, 1956.

(Dissertation for the Degree of Candidate in Technical Sciences.)

SO: Knishnaya Letopis' No. 13, 1956.

ZHUKOV, A.I.; KHL'KO, M.M.; SHKLYAR, M.S.; KAZANTSEV, Ye.I. Prinimali
uchastiye: BLASHCHUK, N.M., inzh.; YARMYSH, V.A., inzh.;
PARKHOMENKO, D.M., inzh.; BULI, V.G., inzh.; BIDENKO, R.V., inzh.;
PASIKOV, N.V., inzh.; ZEMLYANOV, N.G., inzh.; TARASENKO, A.A., inzh.

Firing open-hearth furnaces with a mixture of cold coke and
natural gases. Stal' 21 no.12:1068-1070 D '61.

(MIRA 14:12)

(Open-hearth furnaces—Equipment and supplies)
(Gas as fuel)

PARKHOMENKO, E.I.

Laboratory and field investigations of the piezoelectric effect
in rocks containing nepheline. Dokl. AN SSSR 155 no.6:1314-1316
Ap '64. (MIRA 17:4)

1. Institut fiziki Zemli im. O.Yu.Shmidta AN SSSR. Predstavleno
akademikom A.V.Shubnikovym.

PARKHOMENKO, E.I.

VOLAROVICH, M.P.; GORAZDOVSKIY, T.Ya.; PARKHOMENKO, E.I.

Study of thin pieces of rock under shearing by torsion and pressure from one side. (In: Soveshchanie po eksperimental'noi mineralogii i petrografii. 4th, Moscow, 1952. Trudy, Moskva, 1953. No.2, p.230-236.) (MLRA 7:3)

1. Institut geofiziki Akademii nauk SSSR.

(Rocks)

PARKHOMENKO, E. I.

USSR/Geophysics - Magnetite Sep/Oct 53

"Variations of Magnetic Properties of Magnetites
Under the Action of Large Compressing Stresses,"
M. A. Grabovskiy and E. I. Parkhomenko, Geophys Inst,
Acad Sci USSR

Iz Ak Nauk SSSR, Ser Geofiz, No 5, pp 405-417

Investigate the magnetic properties of magnetite
samples subjected to uniaxial compression due to
hydrostatic pressure. Relate results to present-day
views on ferromagnetism. Derive several geophys
conclusions.

267773

PARKHOMENKO, E. L.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Change of magnetic properties of magnetites under the action of larger compressive tensions. M. A. Grabovskii and E. I. Parkhomenko. *Izvest. Akad. Nauk S.S.S.R., Ser. Geophys.* 1953, 466-17. The magnetic properties of samples of magnetites under the action of considerable uniaxial compression are strongly changed. Especially noticeable are sharp changes of the susceptibility and the residual magnetism. Gladys S. Macy

11/17/54

Parkhomenko, E. I.
USSR/Geophysics - Piezoelectric effect
Card 1/1 Pub. 22 - 14/40
Authors : Volarovich, M. P., and Parkhomenko, E. I.
Title : Piezoelectric effect of mountain rocks
Periodical : Dok. AN SSSR 99/2, 239-242, Nov 11, 1954
Abstract : For the purpose of determining whether or not mountain rocks possess the piezo-electric effect, experiments were performed with samples of various rocks such as gabbro, diabase, diorite, syenite, granite, quartz, and others. A pulse supersonic-seismoscope was used for the experiments. Four USSR references (1940-1953). Graphs.
Institution : Geophysical Institute of the Acad. of Scs. of the USSR
Presented by: Academician G. A. Gamburtzev, September 21, 1954

USSR/Geophysics

PARKHOMENKO, E. I.

FD-1732

Card 1/1 Pul

Author : Volarev, M. P., and Parkhomenko, E. I.

Title : Piezoelectric effect of mineral rocks

Periodical : Izv. AN SSSR, Ser. geofiz. 215-222, May-Jun 1955

Abstract : The author observes that a piezoelectric effect is detected in quartz-containing mineral rocks: granites, quartzite, sandstones, etc. He works out a procedure for applying the ultrasonic seismoscope to the investigation of the piezoelectric effect. Here the samples of mineral rocks operate as electromechanical converters. The author establishes the absence of the observed piezoeffect upon the seismoelectric effect of moist mineral rocks. He makes some assumptions concerning the possible employment of the piezoeffect of mineral rocks in the solution of certain geophysical problems. He thanks B. N. Ivakin, A. G. Ivanov, and M. S. Antsyferov. Twelve references; e.g. Yu. V. Riznichenko, B. N. Ivakin, and V. D. Bugrov, "Impulse ultrasonic seismoscope," Izv. AN SSSR, Ser. geofiz. No 1, 1953.

Institution: Geophysical Institute, Academy of Sciences USSR

Submitted : May 3, 1954

PARKHOMENKO, E.I.

Piezoelectric textures of quartz and rocks containing quartz. Izv.
AN SSSR Ser.geofiz. no.3:297-306 Mr '56. (MLRA 9:7)

1.Akademiya nauk SSSR, Geofizicheskiy institut.
(Quartz—Electric properties) (Piezoelectricity)

PARKHOMENKO, E. I.

124-11-13252

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p. 140 (USSR)

AUTHORS: Volarovich, M. P., and Parkhomenko, E. I.

TITLE: The Study of Sudden Eruption Phenomena and Other Motions of Coal by Means of the Compression of Cylindrical Samples in Steel Cylinders Equipped with Lateral Apertures. (Izucheniye yavleniy vnezapnykh vybrosov i drugikh dvizheniy uglya putem szhatiya obraztsov tsilindricheskoy formy v stal'nykh tsilindrakh s bokovym otverstiyem)

PERIODICAL: Tr. Geofiz. in-ta A N SSSR, 1956, Nr 34 (161), pp 179-192

ABSTRACT: Observations were made of different types of failures similar to cave-ins, explosive failures and eruption of coal. For this purpose samples of coal were placed in a steel cylinder having an aperture and subjected to mechanical stresses (in conditions of non-uniform tri-axial pressure). The kinetic energy of the laboratory "eruption" of the coal was evaluated in terms of the launching speed of a steel probe placed in the aperture. The stress distribution on the sample was studied by an optical method employing polarized light on a transparent model, and the principal sectors of stress concentration were

Card 1/2

PARKHOMENKO, E. I.

124-11-13253

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p. 140 (USSR)

AUTHORS: Volarovich, M. P., and Parkhomenko, E. I.

TITLE: The Reproduction on Slender Samples of Sudden Eruption Phenomena
of Coal under the Effect of Compression and Simultaneous Torsion.
(Vosproizvedeniye yavleniy vnezapnykh vybrosov uglya pri uzhatii
odnovremennom kruchenii tonkikh obraztsov.)

PERIODICAL: Tr. Geofiz. in-ta A N SSSR, 1956, Nr 34 (161), pp 193-207

ABSTRACT: Bibliographic entry.

Card 1/1

PARKHOMENKO, E. I. Cand Phys-Math Sci -- (diss) "The Piezoelectric
Effect of ^{mining} Rocks." Mos., 1957. 13 pp 20 cm. (Academy of Sciences
USSR, Inst: of Physics of the ~~EA~~ Earth), 120 copies (KL, 25-57, 109)

abstract attached.

- 14 -

49-12-15/16

Dissertations Defended in the Scientific Council of the Institute of Physics of the Earth, Institute of Physics of the Atmosphere and Institute of Applied Geophysics, Ac.Sc. USSR during the First Semester in 1957. *Izv. Ak. Nauk SSSR, Seriya Geofizicheskaya No. 12, 1957, p. 1532*

B.I. Parkhomenko - Piezo-electric Effect of Rocks (P'ezoelektricheskiy effekt gornyykh porod) - Candidate dissertation.

Opponents: Doctor of Physico-Mathematical Sciences V.F. Bonchkovskiy, Candidate of Physico-Mathematical Sciences I.S. Zholudev, Candidate of Technical Sciences B.A. Bazhenov.
July 21, 1957.

For many centuries, the descriptions of earthquakes mentioned the light effects, but the physical nature of the latter was not known. With the development of investigations in electricity and improved instrumentation, the electrical character of these phenomena was established. Only individual statements of hypothetic character exist on the sources of the changes of the electrical field of the Earth. In view of the importance of this problem of a possible relation between the electro-magnetic and the seismic fields, the author studied the electrical effects in rocks subjected to mechanical forces. By means of a dynamic method, a piezo-electric effect was observed in rocks (granite, gneiss, quartzites, etc.) containing quartz grains which are orientated in a specific way. In the

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49-12-15/16

Dissertations Defended in the Scientific Council of the Institute of Physics of the Earth, Institute of Physics of the Atmosphere and Institute of Applied Geophysics, Ac.Sc. USSR during the First Semester of 1957.

absence of orientation of the quartz grains, no piezo-electric effect was observed. Under laboratory conditions, the existence of the E effect discovered by A.G. Ivanov, was confirmed and also its relation to the presence of a liquid phase in rocks. On the basis of investigation of ideal piezo-electric textures of quartz in accordance with the theory of A.V. Shubnikov, it was found that from a single modification of quartz, it is possible to form piezo-electric textures of the first kind, type ∞ and $\infty:2$ and of two shapes of quartz, it is possible to form a texture of the type $\infty.m$. The possibility was elucidated of ordinating quartz-containing rocks to piezo-electric textures of the type $\infty.m$ and also to the symmetry class 3:2. A technique was developed of the qualitative measurement of the piezo-electric moduli of rocks in the case of longitudinal and transverse effects, by the static method applying an electrometer. It is shown that in rock specimens of volumes of the order of 10 cm^3 , the piezo-electric effect can be observed owing to the non-compensated

card20/21

- 49-12-15/16
- Dissertations Defended in the Scientific Council of the Institute of Physics of the Earth, Institute of Physics of the Atmosphere and Institute of Applied Geophysics, Ac.Sc. USSR during the First Semester of 1957.

effect of the individual quartz grains. On the basis of experimental data, the coefficient of orientation of the quartz grains was calculated with some degree of approximation in various rocks by means of the formula of Zheludev. Model tests on granite blocks enabled establishment (in addition to an elastic wave) of two types of electro-magnetic oscillations. Oscillations of one type precede the arrival of the elastic wave and coincide with the incident of emission, oscillations of the other type are recorded at about the same time as the elastic wave. The oscillations of the first type are caused by the piezo effect of the granite block near the emitter of the ultra-sound, whilst oscillations of the second type are caused by the piezo-electric effect of the same granite near to the receiver. The results of these experiments can be applied in studying the physics of earthquakes and also for developing new methods of electric prospecting.

AVAILABLE: Library of Congress.
Card 21/21

PARKHOMENKO, E. I.

BALAKINA, L. M.

X(10)

PHASE I BOOK EXPLANATION

007/1663

Abstraktya i doklady, Komitet po geodesii i geofizike.

Triloy dokladov na XI General'noy asambleye Mezhdunarodnogo geofizicheskogo i geofizicheskogo soyuza. Mezhdunarodnaya asociatsiya seismologii i fiziki nad zemli (Abstracts of Reports Submitted to the XI General Assembly of the International Union of Geodesy and Geophysics. The International Association of Seismology and Physics of the Earth's Interior) Moscow, 1977. 108 p. /Parallel texts in Russian and English/ 1,500 copies printed.

No additional contributors mentioned

PURPOSE: This booklet is intended for geophysicists, especially those specializing in seismology.

COVERAGE: This collection of articles deals with the structure and composition of the Earth and phenomena related thereto. The majority of the articles concern studies of earthquakes and seismic waves. Other articles cover the structure of the Earth's crust and mountain roots; the elastic properties of rocks at high pressures; the piezoelectric effect of rocks and the method of modelling in tectonophysics. The collection also contains articles on the Earth's thermal history, the microseismic method of tracing storms and others.

Volkovich, N.P. and E.I. Parkhomenko. Piezoelectric Effect of Rocks	89
Vaynsen, P.S., I. P. Kozinskaya, and Ya. V. Rikhschenko. New Evidence on the Structure of the Earth's Crust and Mountain Roots in Central Asia From Seismic Depth Sounding Data	31
Gerasimov, N.V. Method of Modelling in Tectonophysics	37
Gerasimov, G.P. Seismic Intensity Regions of Asia	42
Davydov, B.I. Physical Properties of Solid Bodies at High Pressures	43
Kaylis-Birch, V.I. Investigation of Earthquake Mechanism	46
Kaylis-Birch, V.I. Dynamic Methods of Investigating the Earth's Crust and Internal Structure (Theory, Electronic Computations and Practical Facts)	51
Karas, Ye.V. Absorption of Elastic Waves in Rocks	55

Card 5/5

Parkhomenko, E. I.

54

AUTHOR: Volarovich, M. P. and Parkhomenko, E. I.

TITLE: Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gornykh porod pri odnostoronnem davlenii).

PERIODICAL: Izvestiya Akademii Nauk, Seriya Geofizicheskaya, 1957, No.2, pp. 190-199. (U.S.S.R.)

ABSTRACT: In investigating rock formations made up of thin disk-like laminae, explosion type failures were observed under conditions of unilateral compression torsion. Plate-discs of 10 m/m dia. and 0.25, 1.5 and 2 m/m thickness were subjected to torsion under conditions of unilateral compression on a specially designed testing apparatus. The following materials were tested: granite, diabase, basalt and basalt glass, gabbro, sienna, quartz, marble and dolomite.

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TITLE:

Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gornykh porod pri odnostoronnem davlenii).

It was found that the individual specimens differ in behavior with respect to compression and torsion as well as the minimum pressure at which the explosion occurs. Granite, basalt, quartzite etc. become splintered during compression and "ground" in torsion; dolomite and marble deform continuously without splintering and "gnashing". Owing to the high plasticity under pressure, a number of rocks (dolomite and marble) break up with an explosion at pressures which are several times the minimum pressure at which comparable explosions occur in rocks which do not have such plastic properties under pressure, in spite of the fact that they have a high compression strength under atmospheric conditions (granite, basalt etc.). Partly crystallized artificial basalt glass has a considerably higher minimum explosion pressure than the original rock and this is attributed to differences in the structure of this material.

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TITLE:

Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gornykh porod pri odnostoronnem davlenii).

The minimum explosion pressures varied between 16 000 kg/cm² and 32 000 kg/cm² and are shown in a table, p.197. A graph, Fig.11, shows the explosion probability curve as function of unilateral pressure for dolomite. The scientist T. Ya. Gorazdovskiy, laboratory workers V. A. Pavlogradskiy and G. A. Suvorova, and geologist M. S. Pichugin participated in this work. The text includes 8 photographs, 2 diagrams, 1 graph and 1 table.

There are 4 references, of which 3 are Slavic.

ASSOCIATION: Academy of Sciences of the USSR, Institute of Terrestrial Physics (Akademiya Nauk SSSR, Intitut fiziki zemli).

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TITLE: Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gorn'ikh porod pri odnostoronnnem davlenii).

PRESENTED BY:

SUBMITTED: 5/26/56

AVAILABLE: Library of Congress

Card 4/4

PARKHOMENKO E. I.

AUTHOR: Parkhomenko, E. I.

49-4-11/23

TITLE: Measurement of the piezo-electric modulus of rocks by means of a static method. (Izmereniye p'yezoelektricheskikh moduley gornyx porod staticheskim metodom).

PERIODICAL: Izvestiya Akademii Nauk, Seriya Geofizicheskaya, 1957, No.4, pp. 516-519 (USSR)

ABSTRACT: Piezo-electric behaviour was observed in various quartz containing rocks (granite, gneiss, quartzite, sandstone, reef-quartz) and in earlier work (Ref.2) the author investigated theoretically ideal piezo-electric textures of quartz. He found that if the quartz texture is formed from one type of quartz (right or left) and all the quartz grains are so orientated in the texture that the direction of the equal sign ends of the electrical axes are directed to one side, a type ∞ texture is obtained. Some of the considerations apply to ideal quartz textures. However, Shubnikov, A.V. (Ref.3) considers existence of a piezo-electric effect possible in less orientated textures which theoretically are formed not solely by rotation about a certain axis but by two rotations about axes located in mutually perpendicular planes, i.e. textures of the second type. The calculated values of the

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49-4-11/23

Measurement of the piezo-electric modulus of rocks by means of a static method.

piezo-moduli relate to textures without disturbances in the orientation and consisting fully of the piezo-electric component, namely, quartz. Rocks cannot form ideal textures and it is also unlikely that the quartz in rocks would have a strict orientation relative to the electric axis. Therefore, rocks should be considered as being mixed textures. The author measured the piezo-moduli for the longitudinal piezo-electric effect by means of a static method consisting in measuring the potential differences generated in rock specimens under the effect of mechanical forces. The pressure was produced by a universal test machine of 30 ton capacity; the potential difference was measured by means of a string galvanometer. The two faces had to be parallel with an accuracy of ± 0.01 mm, the optimum loading speed was found to be 20 m/min and the loading was such as to produce a stress of 15 to 100 kg/cm². The measurements were made on cube specimens of 2 x 2 x 2 cm. The piezo-moduli of granites, quartzites and sandstone consisting of mineral grains of

Card 2/4 the sizes of 1 to 3 mm fluctuated between 0.6 and 1.4%,

49-4-11/23

Measurement of the piezo-electric modulus of rocks by means of a static method.

whilst for fine grain rocks the values were between 0.08 and 0.12% of the piezo effect of monocrystalline quartz in the x-cut. A longitudinal piezo effect was observed in all the three mutually perpendicular directions whereby the values of the piezo-moduli for some of the specimens were approximately the same in all the directions. Those of the obtained values which are considered the most reliable are entered in a table on p.518. The piezo-electric effect of rocks can be of importance for elucidating the nature of electric disturbances observed during certain earthquakes and it can also be useful for evolving a method of determining the time of occurrence of earthquakes and establishing more accurately the position of foci of earthquakes in granite rocks. Furthermore, it can be utilised for developing a new method of geophysical prospecting for detecting quartz containing rocks.

Acknowledgements are made to M. P. Volarovich and I. S. Zheludev for their advice and to A. T. Bondarenko for his assistance in the execution of the here described work.

Card 3/4 There are 2 figures, 1 table and 5 Slavic references.

Measurement of the piezo-electric modulus of rocks by means of a static method. ^{49-4-11/23}

SUBMITTED: December 19, 1956.

ASSOCIATION: Ac.Sc. U.S.S.R. Institute of Physics of the Earth.
(Akademiya Nauk SSSR Institut Fiziki Zemli).

AVAILABLE: Library of Congress.

Card 4/4

PARKHOMENKO, E.I.; CHZHAO TSZE-SAN' [Chao Chieh-san]

Use of laboratory methods in studying the effect of humidity
on the magnitude of the seismoelectric effect in sedimentary
rocks. Izv. AN SSSR. Ser. geofiz. no.2:206-212 F '64.
(MIRA 17:3)

1. Institut fiziki Zemli AN SSSR.

PARKHOMENKO, E. I.

"Piezo-electric Effects in Rocks" p. 248

~~"Synthesis and Structure of Hydrosilicates containing Simple and Complex Heavy Metal Cations" p. 36~~

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems

SOV/49-59-1-17/23

AUTHORS: Volarovich, M. P. and Parkhomenko, E. I.

TITLE: Tests on Relationship of Disturbances in the Electric Field of Rocks and Seismic Phenomena with Application of Models having Piezo-Electric Properties
(Modelirovaniye svyazi vozmushcheniya elektricheskogo polya gorn'nykh porod pri p'yezoelektricheskom effekte s seysmicheskimi yavleniyami)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1959, Nr 1, pp 144-145 + 1 plate (USSR)

ABSTRACT: The piezo-electric properties of rocks containing quartz were investigated. The samples under test were as follows:

- 1) Reznikovskiy granite 31 x 18 x 12 cm;
- 2) Orekhovskiy granite 25 x 5.5 x 5 cm (Fig.1,a);
- 3) Marble 31 x 9 x 5.5 cm;
- 4) Labradorite 30 x 16 x 5 cm.

The last two samples were used only for checking purposes. Also an additional sample of Orekhovsk granite was employed in conjunction with the marble (Fig.1,b). The tests were carried out by means of an ultrasonic seismoscope (Ref 3). The following method

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Tests on Relationship of Disturbances in the Electric Field of
Rocks and Seismic Phenomena with Application of Models having
Piezo-Electric Properties

SOV/49-59-1-17/23

was used: a transmitter made of Seignette's salt was placed at one side of a sample (Fig.1,U) and connected to the generator of a seismoscope. The impulses of the transmitter were recorded by the seismoscope in the manner of "detonations". A receiver made of Seignette's salt or just the electrodes made of copper foil connected to an amplifier, were placed alternately at some distance from the transmitter along a profile on the sample. The steps between various points were kept constant, equal to 4 or 5 cm. The graphs of the elastic and the electromagnetic oscillations produced on the screen of the seismograph for every point of observation were photographed. Fig.2 shows two examples of oscillations at every 4 cm of the sample Nr 2 (the arrangement of testing is shown in Fig.1). The electromagnetic waves are denoted by 1, the elastic - 2, the elastic magnified - 3. The arrows at the 16 cm Card 2/3 point indicate: a - start of elastic impulse, B - start

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Tests on Relationship of Disturbances in the Electric Field of
Rocks and Seismic Phenomena with Application of Models having
Piezo-Electric Properties

of the electromagnetic wave, C - start of the elastic wave. Similar experiments were carried out on the sample of marble and labradorite since they have the same electric conductivity as granite (10^{-7} Ohm.cm). The results show very negligible oscillations which died out at about 10 cm. Fig.3 shows the oscillogram obtained from two samples in contact with each other, granite Nr 1 and marble (Fig.1,b). The steps were 5 cm. As can be seen, the results are identical in both cases. These experiments could be applied in investigations not only on the electromagnetic anomalies during an earthquake, but also in the geophysical methods of surveying where granite rocks are present.

There are 3 figures and 3 Soviet references.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli
(Ac.Sc. USSR, Institute of Earth Physics)

SUBMITTED: October 21, 1957

Card 3/3

3(9)

SOV/20-128-3-25/58

AUTHORS: Volarovich, M. P., Parkhomenko, E. I., Sobolev, G. A.

TITLE: Investigation of the Piezoelectric Effect of Quartz-bearing Rocks in the Open Air

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 525-528 (USSR)

ABSTRACT: The authors first mention previous articles dealing with the above subject. They investigated bare quartzites and gneisses near the cities of Kyshtym and Karabash, Central Ural, and also granite gneisses of the faulted zone on the Irtysh river, East Kazakhstan. The experiments were made for the purpose of determining the pure piezoelectric effect of the above rocks in massive strata. Electric oscillations resulting from the piezoelectric effect are excited due to the propagation of elastic waves throughout quartzite-bearing rock. The waves were produced by a steam ram. The measuring instruments used by the authors featured several channels and permitted simultaneous recording of electric and elastic oscillations. Each channel was composed of a signal receiver, an amplifier, and a galvanometer. The authors measured the

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SOV/20-128-3-25/58

Investigation of the Piezoelectric Effect of Quartz-bearing Rocks in the Open Air

potential difference between the movable electrode fastened to the profile and the grounded electrode fastened outside the quartz-bearing massif. The electrodes and seismographs were placed side by side on the rock surface. The seismic and electric oscillations resulting from the shock were simultaneously recorded on one oscillogram. In the investigations carried out in Ural, a piezoelectric effect of quartzites and gneisses was recorded at distances of up to 6 m from the point of the shock. Electric oscillations were recorded at various distances from this point. In measurements on frequencies of 350 cycles, the absolute value of the recorded electric signals was 1,000 μv 1.5 m far from the point of the shock, and $\sim 500 \mu\text{v}$ at a distance of 6 m. At 1,000 cycles, electric oscillations were weaker by one order. Granite gneisses of Kazakhstan permitted observation of piezoelectric oscillations over a distance of 40 m. Electric signals were recorded some time after the shock, e.e. just when the elastic pulse reached the point of reception. Thus, the piezoelectric effect was recorded that had been produced within the electrode range. To gather additional data on the piezoelectric effect

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80V/20-120-3-25/58

Investigation of the Piezoelectric Effect of Quartz-bearing Rocks in the Open Air

of the rocks investigated in the open air, the piezoelectric moduli were measured also in a laboratory. The results are similar to those obtained from measurements in the open air. A. G. Ivanov (Ref 4) observed current pulses during mechanical shocks. Theoretical investigations were carried out by A. V. Shubnikov (Ref 1). There are 2 figures and 6 Soviet references.

ASSOCIATION: Institut fiziki Zemli im. O. Yu. Shmidta Akademii nauk SSSR
(Institute for Physics of the Earth imeni O. Yu. Shmidt of the Academy of Sciences, USSR)

PRESENTED: May 25, 1959, by A. V. Shubnikov, Academician

SUBMITTED: May 19, 1959

Card 3/3

S/049/60/000/01/006/027
E201/E191

AUTHOR: Parkhomenko, E.I.

TITLE: A Dynamic Method of Investigation of the
Trieoelectric Effect in Rocks and Some Dielectrics

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya,
1960, No 1, pp 55-62

TEXT: The author investigated oscillations of the electric field produced by passage of elastic waves through rocks free of piezoelectric inclusions and through other dielectrics, all of which were electrified by friction. The observations were made by means of an ultrasonic seismoscope (Ref 5) shown schematically in Fig 1. The source of elastic waves was a Rochelle salt crystal (1 in Fig 1) with the fundamental frequency of 60 kc/s. The sample itself (2 in Fig 1) was a receiver and a transducer of elastic oscillations into electric ones. Copper foil electrodes at two opposite faces of this sample were connected to a wide-band amplifier. Between the source and the sample a Plexiglas cylinder (3 in Fig 1) was inserted; it served both as an acoustic delay line and an electric insulator. Before the experiments the samples were carefully washed in acetone and alcohol and then

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S/049/60/000/01/006/027
E201/E191

**A Dynamic Method of Investigation of the Triboelectric Effect in
Rocks and Some Dielectrics**

neutralized in the flame of a spirit burner. The order of observations was as follows. First the seismoscope was used to obtain the electric oscillations produced by elastic waves in a neutralized sample and then the sample was electrified by friction and again subjected to the action of elastic waves. Some of the oscillograms obtained are shown in Figs 2-7. It was found that marble, amber, ebonite, Plexiglas (Perspex) and polystyrene electrified by friction exhibit quite strong electric oscillations on passage of elastic waves through them. Syenite, basalt, labradorite and other rocks could not be electrified because of high surface or volume conductivity. It was concluded that triboelectrification produces volume polarization because the effect exhibits polarity (opposite ends of the sample charged oppositely) and this polarity is different in Plexiglas and marble from the polarity in polystyrene, amber and ebonite (Table 1). The volume polarization produced by triboelectrification was found to be retained for fairly considerable times. In Plexiglas rubbed against marble the amplitude of electric vibrations produced by

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S/049/60/000/01/006/027
E201/E191

A Dynamic Method of Investigation of the Triboelectric Effect in Rocks and Some Dielectrics

elastic waves decayed from the initial value of 15.0 units (not specified) to 12.0 units after 48 hours, and 6.0 units after 144 hours; in marble rubbed against Plexiglas this decay was much more rapid (Table 2). Experiments with pairs of samples showed that anomalous disturbances of the terrestrial electric field could be produced by displacement of rocks with respect to one another (electrification by friction). The order of magnitude of such effects could not be estimated.

There are 7 figures, 2 tables and 14 references: 11 Soviet, 1 English and 2 German.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli
(Institute of Physics of the Earth, Academy of
Sciences, USSR)

SUBMITTED: January 9, 1959

Card 3/3

✓
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S/049/60/000/02/017/022
EO32/E414

AUTHORS: Parkhomenko, E.I. and Bondarenko, A.T.

TITLE: The Effect of One-Sided Pressure on the Electrical Resistance of Rocks ✓

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya
1960, Nr 2, pp 326-332 (USSR)

ABSTRACT: At the present time there is only one paper available on the effect of pressure on the electrical resistance of rocks (Hughes - Ref 1). Hughes studied the electrical properties of peridotite for pressures of up to 10000 kg/cm² and at temperatures of 1063, 1143 and 1210°. Since this work was rather specialized, the present author has carried out more extensive studies of the electrical conductivity of rocks under the action of one-sided pressure. The electrical resistance was measured by the DC method described by Zaborovskiy (Ref 2) and Bogorodetskiy (Ref 3). The specimens were cut in the form of discs 0.5 to 2.0 cm in height and 2.8 to 7.0 cm in diameter. The electrical conductivity was measured in low fields (3 to 800 V) in which Ohm's law still holds. The various necessary electrodes were

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S/049/60/000/02/017/022
E032/E414

The Effect of One-Sided Pressure on the Electrical Resistance of
Rocks

in the form of graphite deposits on the specimens and the contact between the specimens and the conducting wires was made with the aid of tin foil. In order to have uniform fields, the area of the measuring electrodes was 39 to 45% of the area of the high-voltage electrode. The guard ring which was also in the form of graphite emulsion was deposited on the cylindrical surface of the specimen. Under room conditions, the guard ring reduced the current by 10 to 25% in basalt and diobase specimens and by 50% in schist specimens. In dehydrated specimens having a resistance of the order of $10^{10} \Omega\text{cm}$ or higher, the surface currents were very small and sometimes unmeasurable. Depending on the magnitude of the resistance to be measured, use was made of the galvanometer M91/A or a microammeter with a mirror scale. Measurements were taken on specimens of basalt, diobase, peridotite, limestone, schist and sandstone. The results obtained are summarized in the table on pp 329-330, which gives the specific resistance of the materials investigated for various water contents

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and under one-sided pressure. It was established that both the behaviour of rocks in a constant electric field, and the changes in the resistivity, strongly depend on the moisture content. The greatest change in the resistance is observed not at maximum or minimum humidity but at a certain intermediate value. Such an increase in the electrical conductivity of rocks as a function of pressure is apparently due to the formation of continuous and conducting channels of liquid on compression of the specimen. It was found also that the most rapid increase in the electrical conductivity during one-sided compression is observed in the region of relatively small mechanical pressures of, say 200 kg/cm², while the greatest change (5 to 100%) was observed in schist specimens having a moisture content of 28 to 32%. The figure captions are as follows:
Figure 1 - Current (μA) through a basalt 21 specimen as a function of time: (1 - on application of a constant field, 2 - on application of the opposite field, 3 - on application of the original field).

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Figure 2 - Reduction in the current with time (min) for a basalt 21₂ specimen: (Curve 1 - dehydrated, Curve 2 - 0.23% moisture content, Curve 3 - 0.88% moisture content). Figure 3 - The current through a sandstone 1415₁ specimen as a function of time. Figure 4 - Current through a sandstone 1409₂ specimen as a function of time (min) for direct and reversed fields. Figure 5 - Dependence of the specific resistance of basalt specimens on the moisture content (in %): (1 - basalt 4₁; 2 - basalt 2; 3 - basalt 21₂; 4 - basalt 21₁). Figure 6 - Specific resistance of basalt 21₁ as a function of pressure (kg/cm²; one-sided). Figure 7 - Specific resistance of sandstone 1409₁ as a function of pressure. Figure 8 - Specific resistance of basalt 4₁ as a function of pressure. There are 8 figures and 11 references, 10 of which are Soviet and 1 English.

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The Effect of One-Sided Pressure on the Electrical Resistance of
Rocks

ASSOCIATION: Akademiya nauk SSSR Institut fiziki Zemli
(Academy of Sciences USSR, Institute of Physics of the
Earth)

SUBMITTED: July 18, 1959

Card 5/5

PARKHOMENKO, E.I.

Model studies of the piezoelectric effect of a quartz vein buried
in piezoelectrically neutral rocks. Izv. AN SSSR. Ser. geofiz.
no.9:1345-1353 S '61. (MIRA 14:9)

1. Akademiya nauk SSSR, Institut fiziki Zemli.
(Piezoelectricity) (Seismic prospecting)

VOIAROVICH, M.P.; SOBOLEV, G.A.; PARKHOMENKO, E.I.

Piezoelectric effect of pegmatite and quartz veins. Izv. AN
SSSR. Ser. geofiz. no.2:145-152 F '62. (MIRA 15:2)

1. AN SSSR, Institut fiziki Zemli.
(Piezoelectricity)
(Quartz)
(Pegmatites)

PARKHOMENKO, E.I.; VOLAROVICH, M.P., prof., civ. red.

[Electric properties of rocks] Elektricheskie svoystva
gornyykh porod. Moskva, Nauka, 1969. 163 p.

(MIRA 18:10)

L 32734-66 EWT(1) GW

ACC NR: AP6010817

SOURCE CODE: UR/0387/65/000/012/0045/0052

AUTHOR: Valeyev, K. A.; Parkhomenko, E. I.

ORG: Institute of Physics of the Earth, Academy of Sciences, SSSR (Institute fiziki zemli, Akademiya nauk SSSR)

TITLE: Electrical properties of rocks in direct and alternating electrical fields

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 12, 1965, 45-52

TOPIC TAGS: electric property, mineral, dielectric constant, *ELECTRIC FIELD*, *ELECTRIC RESISTANCE*

ABSTRACT: The purpose of this investigation was to establish the true character of the regularity of the change of resistivity and the dielectric constant with frequency in order to increase the quality of interpreting the data from field investigations. The experiments were carried out on sandstone, limestone, dolomite, marl, and siltstone. The investigation revealed that the character of the frequency dependence of the electrical parameters of sedimentary rocks is determined by the content of pore water in them. The resistivity of sedimentary rocks, whose absolute value does not exceed 10^6 ohm·cm in the frequency range from 0 to 10^5 cps does not depend on frequency. With an increase of resistance

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the role of the active component of the polarization current increases which is the cause for the change of resistance with frequency. The dielectric constant of sedimentary rocks in the water-content range from 3 to 15% at frequencies from 10^2 to 10^5 cps is virtually independent of the frequency. At small values of the water content (approximately from hundredths of a percent to 3%) a frequency dependence of the dielectric constant is observed and its value in the frequency range from 10^2 — 10^5 cps does not exceed 5—6 fold. The dispersion of the values of the dielectric constant of wet rocks, which is observed in measurements with electrodes directly adjacent to the rocks, is fictitious and is caused by contact phenomena. Orig. art. has: 7 figures and 6 formulas.

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Card 2/2

JS

ACC NR:

AM6009950

Monograph

UR/

Parkhomenko, E. I.

Electrical properties of rock (Elektricheskiye svoystva gornykh porod), Moscow, Izd-vo "Nauka", 1965, 163 p. illus., biblio. (At head of title: Akademiya nauk SSSR. Institut fiziki Zemli imeni O. YU. Shmidt) Errata slip inserted. 2,100 copies printed.

TOPIC TAGS: petrology, dielectric permeability, dielectric loss, electric conductivity, thermoelectric property, mineral

PURPOSE AND COVERAGE: This book covers the methods and results of research of electrical parameters of rocks and minerals: dielectric permeability, electric conductivity and dielectric loss in relation to their mineral composition and petrographic characteristics and depending on the temperature and pressure. First in the book is a systematized and generalized study of the problem of the behavior of rock in constant and changing electric fields. Several examples are given of the use of data on electrical properties of rock in geophysics. Also included are a series of guide tables and bibliographic material. The book is recommended for scientists and engineers studying the electrical properties of rock in relation to problems of geology, geophysics and mining. It can also be used as a text for students and aspirants specializing in geophysics and geology.

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AM6009950

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SUB CODE: 08,20/ SUBM DATE: 21Sep65 ORIG REF: 212 OTH REF: 064

Card 2/2

VALEYEV, K.A.; PARKHOMENKO, E.I.

Electric properties of rocks in constant and variable electric fields. Izv. AN SSSR. Fiz. zem. no.12:45-52 '65.

(MIRA 19:1)

1. Institut fiziki Zemli AN SSSR. Submitted March 4, 1965.

VOLAROVICH, M.P.; VALEYEV, K.A.; PARKHOMENKO, E.I.

Specific resistance of rocks in constant and variable electric fields. Izv. AN SSSR Fiz. zem. no. 5:551-56 '65.

(MIRA 1966)

1. Institut fiziki Zemli AN SSSR.

ACCESSION NR: AP4023374

S/0049/64/000/002/0206/0212

AUTHORS: Parkhomenko, E. I.; Chao, Chieh-San

TITLE: Investigation by laboratory methods of the effect of moisture on the seismoelectric effect in sedimentary rocks

SOURCE: AN SSSR. Izv. Seriya geofizicheskaya, no. 2, 1964, 206-212

TOPIC TAGS: seismoelectric effect, moisture effect, dolomite, moraine, loam, bound water, induced polarization, resistivity

ABSTRACT: The authors have studied dolomite, morainal material, and loam, and they found a marked increase in the seismoelectrical effect in moist zones. When the water content is near the largest content of bound water, the effect reaches a maximum and may remain rather constant over some range. At larger contents of moisture the seismoelectric effect declines. The authors conclude that the seismoelectric effect is a property of water content in rocks that has been too little studied, either in the field or in the laboratory. They think it an important factor to consider in studying induced polarization, resistivity, and self potential in sedimentary rocks. They believe also that it may prove to be a

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